

Amendments to Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1-9. *(canceled)*.

10. *(previously presented)* A receiver, comprising:

a substrate;

a first mixer that performs up-conversion and is disposed on the substrate;

a differential filter coupled to an output of the first mixer;

a second mixer that performs down-conversion and provides image rejection, disposed on the substrate and coupled to an output of the differential filter, wherein the second mixer is a differential I/Q mixer;

a first polyphase circuit disposed on the substrate that provides I and Q local oscillator signals for mixing in the second mixer; and

a second polyphase circuit disposed on the substrate that combines I and Q output signals of the second mixer to complete the image rejection;

wherein the differential filter is external to the substrate and has a passband that is determined to pass an up-converted output of the first mixer.

11. *(previously presented)* The receiver of claim 10, wherein the differential filter is a surface acoustic wave (SAW) filter.

12-13. *(canceled)*.

14. *(previously presented)* The receiver of claim 10, wherein the substrate is processed using CMOS.

15-16. *(canceled)*.

17. *(previously presented)* The receiver of claim 10, wherein the first mixer and the second mixer are differential mixers.

18. *(currently amended)* The receiver of ~~[[claim]]~~ claim 10, wherein the differential filter removes at least one channel from a plurality of channels received from the output of the first mixer.

19-24. *(canceled)*.

25. *(previously presented)* A method for processing a RF signal having a plurality of channels, comprising:

- (1) mixing the RF signal with a first differential local oscillator signal to produce a first differential IF signal;
- (2) removing at least one unwanted channel from the first differential IF signal using a differential filter having a passband that is higher in frequency than the RF signal to produce a second differential IF signal;
- (3) adjusting the first local oscillator signal so that a selected channel in the plurality of channels is shifted into a passband of the differential filter;

(3a) generating a second differential local oscillator signal having I and Q components using a first polyphase circuit;

(4) mixing the second differential IF signal with a second differential local oscillator signal to produce a second differential IF signal, including combining I and Q differential IF outputs in a second polyphase circuit to produce said second differential IF signal;

wherein steps (1), (3), (3a) and (4) are performed on a common substrate, and wherein step (2) is performed external to the common substrate.

26. *(previously presented)* The method of claim 25, wherein the plurality of channels are television channels.

27. *(previously presented)* The method of claim 25, further comprising the step of:

(5) removing at least one unwanted channel from the second differential IF signal.

28-29. *(canceled)*.

30. *(previously presented)* The method of claim 25, further comprising the step of:

(5) performing automatic gain control on the second IF signal on the common substrate.

31. *(previously presented)* The method of claim 25, wherein step (4) includes the step of removing at least one unwanted image from the second differential IF signal.

32. *(previously presented)* A receiver for processing a plurality of channels, comprising:

a substrate;

a first differential mixer disposed on the substrate, and that performs up-conversion;

a differential filter coupled to an output of the first differential mixer and configured external to the substrate, wherein the differential filter has a passband that is determined to pass an up-converted output of the first differential mixer;

a second differential mixer, disposed on the substrate and coupled to an output of the differential filter, said second differential mixer providing down-conversion and image rejection;

a first polyphase circuit disposed on the substrate that provides I and Q local oscillator signals to an input of said second differential mixer; and

a second polyphase circuit disposed on the substrate that combines I and Q output signals of the second differential mixer to complete the image rejection.

33. *(previously presented)* The receiver of claim 10, further comprising a first local oscillator disposed on said substrate and providing a first local oscillator signal to said first mixer.

34. *(previously presented)* The receiver of claim 33, wherein a frequency of said first local oscillator signal is varied to perform channel selection.

35. *(previously presented)* The receiver of claim 33, further comprising a second local oscillator disposed on said substrate and providing a second local oscillator signal to said first polyphase circuit.

36. *(previously presented)* The receiver of claim 35, wherein at least one of said first local oscillator signal and said second local oscillator signal are differential.

37-38. *(canceled)*.

39. *(previously presented)* The receiver of claim 10, wherein said first mixer includes a differential input port, a differential output port, and a differential local oscillator port.

40. *(previously presented)* The receiver of claim 10, wherein said second mixer includes a differential input port, a differential output port, and a differential local oscillator port.

41. *(previously presented)* The receiver of claim 32, further comprising:
a first differential local oscillator disposed on said substrate and having an output coupled to a local oscillator port of said first differential mixer; and

a second differential local oscillator disposed on said substrate and having an output coupled a local oscillator port of said first polyphase circuit.

42. *(previously presented)* The receiver of claim 41, wherein a frequency of said first differential local oscillator is varied to perform channel selection in said first differential filter.